

REMARKS/ARGUMENTS

Favorable consideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-51 are pending in the application, with Claims 1, 3, 5, 26, 47 and 49 amended by the present amendment.

In the outstanding Office Action, Figure 3A was objected to; Claims 1, 2, 5-8, 47 and 48 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tamiya (JP 08-030119, hereinafter Tamiya) in view of Inoue (JP 2002-091252); Claims 5, 9 and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tamiya in view of Koizumi (U.S. Patent No. 4,348,098); Claims 15 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tamiya in view of Iwata (JP 2002-023574); Claim 25 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Tamiya, in view of Inoue and Hujii et al. (U.S. Patent No. 6,025,108, hereinafter Hujii); Claims 3, 4, 26-29 and 49-51 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tamiya and Inoue in view of Aoki et al. (JP 2002-174934, hereinafter Aoki); Claims 26, 30 and 31 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tamiya and Koizumi in view of Aoki; Claims 26 and 32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Tamiya, Iwata and Aoki; Claim 46 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Tamiya, Inoue, Hujii and Aoki; and Claims 12-23, and 33-44 were indicated as containing allowable subject matter. Claims 24 and 45 were indicated as being objected to for informalities yet were also indicated as containing allowable subject matter. Applicants note that no basis for the objections to Claims 24 and 45 are listed in the outstanding Office Action.

Applicants acknowledge with appreciation the indication of allowable subject matter.

Figure 3A is amended as requested in the Official Action.

Independent method Claims 1, 3, 5 and 25 are amended to recite “said step of controlling a surface potential includes applying a negative voltage to said transfer medium before said optically neutralized surface reaches said toner nip portion and applying a positive voltage to said transfer medium after said optically neutralized surface leaves said toner nip portion.” Independent apparatus Claims 47 and 49 are similarly amended. Support for these amendments is found in Applicants’ originally filed specification.¹ No new matter is added.

Briefly recapitulating, amended Claim 1 is directed to an image transfer method that includes a) optically neutralizing a surface potential of an image bearing element that carries a toner image; b) controlling a surface potential of a transfer medium so that toner is not transferred from the image bearing element to the transfer medium at an upstream of a contact area between the image bearing element and the transfer medium, while controlling a surface potential of a transfer medium so that the toner is transferred from the image bearing element to the transfer medium at a toner nip portion; and c) transferring a plurality of toner images of different colors from the image bearing element repeatedly to the transfer medium to form a superposed toner image on the transfer medium. The step of controlling a surface potential includes applying a negative voltage to the transfer medium before said optically neutralized surface reaches the toner nip portion and applying a positive voltage to the transfer medium after the optically neutralized surface leaves the toner nip portion. Independent Claims 3, 5, 26, 47, and 49 are directed to alternative embodiments of Applicants’ invention, each reciting that the surface potential of the transfer medium is optically controlled. Applicants’ claimed invention allows for improved toner use.²

¹ Specification, Figure 1.

² Specification, page 15, line 1 – page 16, line 19; Figures 2-3.

Tamiya describes the use of charged contact rollers (53 and 54) to control the polarity of toner.³ As acknowledged by the Official Action, Tamiya fails to disclose or suggest Applicants' claimed step of optically neutralizing. Also, contrary to the Official Action, Tamiya fails to disclose controlling a surface potential of a transfer medium so that toner is not transferred from the image bearing element to the transfer medium at an upstream of a contact area between the image bearing element and the transfer medium while controlling a surface potential of a transfer medium so that the toner is transferred from the image bearing element to the transfer medium at a toner nip portion as recited in Applicants' amended Claim 1. Tamiya also fails to disclose or suggest Applicants' claimed steps of applying a negative voltage to the transfer medium before the optically neutralized surface reaches the toner nip portion and applying a positive voltage to the transfer medium after the optically neutralized surface leaves the toner nip portion.

Also, the charged rollers 53, 54 of Tamiya contact with surface 52 at point L1 on the upstream side and L2 on the downstream side. However, in the present invention, as far as it is possible to control the surface potential of the transfer medium so that the toner is not transferred from the image bearing element to the transfer medium upstream from a contact area between the image bearing element and the transfer medium, there is no limitation to rollers R1 and R2 of the present invention regarding how to contact with the transfer medium. It is even possible to dispose R1 and R2 at a position where R1 and R2 can contact with the image bearing element through the transfer medium. In contrast, charged rollers 53, 54 of Tamiya are disposed at positions where they do not contact with the image bearing element.

Inoue describes radiating light to erase the optical memory in a photosensitive drum. However, Inoue fails to disclose or suggest controlling a surface potential of a transfer medium of any kind, let alone Applicants' claimed "controlling a surface potential of a

³ Tamiya, abstract and Figure 7.

transfer medium so that toner is not transferred from the image bearing element to the transfer medium at an upstream of a contact area between the image bearing element and the transfer medium while controlling a surface potential of a transfer medium so that the toner is transferred from the image bearing element to the transfer medium at a toner nip portion.”

MPEP §706.02(j) notes that to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Also, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant’s disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Without addressing the first two prongs of the test of obviousness, Applicants submit that the Official Action does not present a *prima facie* case of obviousness because both Tamiya and Inoue fail to disclose all the features of Applicants’ claimed invention.

Furthermore, Applicants submit there is no teaching, suggestion, or motivation, either explicitly or implicitly, in either reference to combine the charging rollers of Tamiya with the light erasure of Inoue to arrive at Applicants’ inventions recited in Applicants’ independent. Thus, Applicants submit it is only through an impermissible hindsight reconstruction of Applicants’ invention that the rejection of Applicants’ independent claims can be understood.⁴

⁴ MPEP § 2143.01 “Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge of one of ordinary skill in the art.”

Also regarding motivation to combine, Applicants note that one object of the present invention is to neutralize the electrical potential difference between the image forming portion and non-image forming portion of the surface of the image bearing element in order to mitigate reverse transfer. However, in conventional neutralization, the problem of transfer scattering is common. Thus, another object of the present invention is to prevent transfer scattering by preventing toner from being transferred from the image bearing element to the transfer element. Inoue aims to neutralize the surface of the image bearing element in order to erase an optical memory. That is, the neutralization of Inoue occurs *after* image transfer has been completed. In the present invention, neutralization occurs after development of a latent image and *before* image transfer. Both Tamiya and Inoue fail to acknowledge the problem of transfer scattering. Thus, Applicants submit that there is no motivation to combine these references and to move the neutralization device of Inoue from *after* image transfer to *before* image transfer to arrive at Applicants' claimed invention.

Applicants have considered the remaining applied references and submit these references also fail to cure the deficiencies of Tamiya and Inoue. As none of the cited prior art, individually or in combination, disclose or suggest all the elements of independent Claim 1, Applicants submit the inventions defined by Claim 1, and all claims depending therefrom, are not rendered obvious by the asserted references for at least the reasons stated above.⁵ For similar reasons, Applicants submit that Claims 3, 5, 26, 47, and 49, and all claims depending therefrom, are not rendered obvious by the cited references.

⁵ MPEP § 2142 "...the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)."

Accordingly, in view of the present amendment and in light of the previous discussion, Applicants respectfully submit that the present application is in condition for allowance and respectfully request an early and favorable action to that effect.

Respectfully submitted,

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